

### **REMARKS**

With claims 12-16, 19, 30, 31 and 56-63 pending, claims 12, 13, 16, 30, 31 and 57, 58, 62 and 63 have been cancelled, and new claims 64-66 have been added as shown above. Claims 14, 19, 56 and 59 have been amended to create independent claims. The remaining claims have been amended to conform with the amendments to claims 14, 19, 56 and 59. The claims have further been amended as described in more detail to follow.

#### **Section 102 Rejection (Anticipation by Imai et al.)**

Claims 12-13, 15 and 30 stand rejected under 35 U.S.C. §102(b) as being anticipated by Imai, et al., WO 97/27622 (hereinafter Imai). Claims 12, 13 and 30 have been cancelled rendering this rejection moot with respect to those claims. Claim 15 has been amended to be dependent on independent claim 14, and is believed allowable based at least on its dependence on claim 14.

#### **Section 102 Rejection (Anticipation by Collins, et al.)**

Claims 12-13, 15, 30 and 56-61 stand rejected under 35 U.S.C. §102(b) as being anticipated by Collins, et al. (U.S. Patent 5,556,501, hereafter Collins). Claims 12, 13, 30, 57 and 58 have been cancelled rendering this rejection moot with respect to those claims. Claim 15 has been amended to be dependent on independent claim 14, and is believed allowable based at least on the dependence on claim 14.

Regarding claim 56, the examiner notes that Collins in col. 21 line 43 to col. 22 line 43 discloses a side electrode formed from the walls which are heated. However, claims 56 has been amended to claim a second heater provided in a side electrode. Collins does not disclose a heater provided in the side electrode. Claim 56, as amended, is thus believed not anticipated by Collins.

Claim 59 has been amended to claim “a heater provided in a surface selected from side electrodes, electrode shields, and walls of the reactor.” Collins does not disclose providing a heater in any of a side electrode,

electrode shield, or walls of a reactor. Claim 59, as amended, is thus believed not anticipated by Collins. Claims 60-61 are further believed allowable base at least on their dependence on claim 59.

### **Section 103 Rejection Of Claims 14 (Over Imai)**

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Imai. The Examiner states that Imai teaches the elements of claim 14, but fails to expressly disclose heating the upper electrode to a temperature of about 300 Celsius to about 500 Celsius. However, the Examiner indicates a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support patentability unless there is evidence indicating such concentration or temperature is critical. The Examiner cites In re Allen, 105 USPQ 233, 235 (CCPA 1955) for the proposition “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” This rejection is respectfully traversed.

Applicant’s critical temperature range is well beyond an optimum work range for a reactor (normally below 100 Celsius) as might be found by routine experimentation, as referred to in In re Allen. Applicant’s specification on page 6, paragraph 25 indicates that the electrode in a reactor under normal operation conditions will have a maximum temperature of 100 Celsius. In the previous paragraph 24 on page 6 of Applicant’s specification, the temperature of the electrode in the preferred embodiment ranges from 300 Celsius to 500 Celsius. On page 6, paragraph 26 of Applicant’s specification it is disclosed that the increased electrode temperature the deposits form thinner and more durable layer which sticks better to the electrode surface and does not easily flake or spauld off. As indicated on page 2, paragraph 5, making the deposits more durable is a critical feature of the present invention.

Although Imai discloses a heating element 11 provided on an electrode 5, it only discloses heating to assure a uniform temperature across the electrode. See, Imai column 1 lines 39-41. No disclosure is provided

in Imai to increase the electrode temperature above the 100 Celsius normal operation to a range as high as about 300 Celsius, as claimed in claim 14. Accordingly, claim 14 is believed allowable as non-obvious under 35 U.S.C. § 103 over Imai.

#### **Section 103 Rejection Of Claims 14 (Over Collins)**

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Collins, et al. (U.S. Patent 5,556,501, hereinafter Collins). As with Imai, the Examiner indicates that Collins teaches the elements of claim 14, but fails to expressly disclose heating the upper electrode to a temperature of about 300 Celsius to about 500 Celsius. However, the Examiner indicates a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support patentability unless there is evidence indicating such concentration or temperature is critical, citing In re Allen. This rejection is respectfully traversed.

As with Imai, Collins does not teach or disclose increasing the electrode temperature beyond a normal operating temperature of up to 100 Celsius. As indicated above with respect to Imai, the temperature range of about 300 Celsius and above, as claimed in claim 14, is critical to Applicant's invention, in that it makes deposits on the electrode more durable than in reactions where the electrode is in a normal operating temperature. Accordingly, claim 14 is believed to be patentable as non-obvious under 35 U.S.C. § 103 over Collins.

#### **Section 103 Rejection Of Claims 16, 19 and 31 (Over Collins in view of DeOrnellas)**

Claims 16, 19 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Collins in view of DeOrneallas et al., (WO 99/25568, hereafter DeOrneallas). Claims 16 and 31 have been cancelled rendering this rejection moot with respect to those claims. Regarding remaining claim 19, the Examiner states that Collins discloses the claim elements except it fails to expressly disclose a platinum etch method, or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-

absorb from the upper electrode in order to leave mostly platinum deposited as claimed. The Examiner further states, however, that DeOrneallas discloses a similar configuration as Collins where platinum or other materials such as platinum are etched in a chlorine gas. The Examiner then indicates that it would have been obvious to modify the process of Collins so as to perform the platinum etching process of DeOrneallas because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer. This rejection is respectfully traversed.

DeOrneallas does not disclose heating the upper electrode to cause deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited, as claimed in claim 19. As indicated on page 6, paragraphs 24-26 of Applicant's specification, significant heating of the upper electrode is needed to cause de-absorption and leave mostly platinum deposited. A typical reactor can deposit platinum, as disclosed in DeOrneallas. However, neither DeOrneallas nor Collins disclose the further step of heating to a degree needed to cause de-absorption of oxygen and chlorine leaving mostly platinum to be deposited. Accordingly, claim 19 is believed to be patentable as non-obvious under 35 U.S.C. § 103 over Collins in view of DeOrneallas.

#### **Section 103 Rejection Of Claims 16, 19 and 31 (Over Imai in view of DeOrneallas)**

Claims 16, 19 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Imai in view of DeOrneallas. Claims 16 and 31 have been cancelled rendering this rejection moot with respect to those claims. Regarding remaining claim 19, as with Collins, the Examiner states that Imai discloses the claim elements except it fails to expressly disclose a platinum etch method, where heating the upper electrode causes deposits of oxygen and chlorine to de-absorb leaving mostly platinum deposited as claimed. The Examiner further states, however, that the disclosure of a platinum etch process in DeOrneallas in combination with Imai renders Applicant's claim 19 obvious. This rejection is respectfully traversed.

As indicated above, DeOrneallas does not teach or disclose heating the upper electrode to a degree to cause deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the upper electrode, as claimed in claim 19. Imai, as indicated previously, further does not teach heating the electrode to a degree greater than used during a normal reaction process. Accordingly, claim 19 is believed to be patentable as non-obvious under 35 U.S.C. § 103 over Imai in view of DeOrneallas.

#### **Section 103 Rejection Of Claims 16, 19 and 31 (Over Collins in view of Keizo)**

Claims 16, 19 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Collins in view of Keizo (JP 07-130712A). Claims 16 and 31 have been cancelled rendering this rejection moot with respect to those claims. Regarding remaining claim 19, the Examiner states that Collins discloses the claim elements except it fails to expressly disclose a platinum etch method, where heating the upper electrode causes deposits of oxygen and chlorine to de-absorb leaving mostly platinum deposited as claimed. The Examiner further states, however, that the disclosure of a platinum etch process in Keizo in combination with Collins renders Applicant's claim 19 obvious. This rejection is respectfully traversed.

Keizo does not teach or disclose heating the upper electrode to cause deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the upper electrode, as claimed in claim 19. Keizo, instead, only teaches heating the workpiece to provide a platinum etch process. Collins, as indicated previously, further does not teach heating the electrode to a degree greater than used during a normal reaction process. Accordingly, claim 19 is believed to be patentable as non-obvious under 35 U.S.C. § 103 over Collins in view of Keizo.

### **Section 103 Rejection Of Claims 16, 19 and 31 (Over Imai in view of Keizo)**

Claims 16, 19 and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Imai in view of Keizo. Claims 16 and 31 have been cancelled rendering this rejection moot with respect to those claims. Regarding remaining claim 19, the Examiner states that Imai discloses the claim elements except it fails to expressly disclose a platinum etch method, where heating the upper electrode causes deposits of oxygen and chlorine to de-absorb leaving mostly platinum deposited as claimed. The Examiner further states, however, that the disclosure of a platinum etch process in Keizo in combination with Imai renders Applicant's claim 19 obvious. This rejection is respectfully traversed.

As indicated above, Keizo does not teach or disclose heating the upper electrode to cause deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the upper electrode, as claimed in claim 19. Imai, as indicated previously, further does not teach heating the electrode to a degree greater than used during a normal reaction process. Accordingly, claim 19 is believed to be patentable as non-obvious under 35 U.S.C. § 103 over Imai in view of Keizo.

### **Section 103 Rejection Of Claims 56-61 (Over Imai in view of Collins)**

Claims 56-61 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Imai in view of Collins. Claims 57 and 58 have been cancelled rendering this rejection moot with respect to those claims. Regarding remaining claims 56 and 59-61, the Examiner states that Imai discloses the claim elements except it fails to expressly disclose providing power to the upper electrode and a three electrode structure with a side electrode which is heated. The Examiner further states, however, that the disclosure in Collins of a side electrode formed from the walls of a reactor which are heated in combination with Imai renders Applicant's claims 56 and 59-61 obvious. Based on the above amendments and the following remarks, this rejection is believed to be overcome.

Claim 56 has been amended to claim a second heater provided in a side electrode. Neither Imai or Collins does not disclose a heater provided in the side electrode. Claim 56, as amended, is thus now believed to be non-obvious under 35 U.S.C. § 103 over Imai in view of Collins.

Claims 59-61 have been amended to claim “a heater provided in a surface selected from side electrodes, electrode shields, and walls of the reactor.” Neither Imai nor Collins disclose providing a heater in any of a side electrode, electrode shield, or walls of a reactor. Claims 59-61 are, thus, now believed to be allowable as non-obvious under 35 U.S.C. § 103 over Imai in view of Collins.

#### **Section 103 Rejection Of Claims 62-63 (Over Imai in view of Yamazaki)**

Claims 62-63 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Imai in view of Yamazaki et al., (U.S. Patent 6,001,432, hereafter Yamazaki). Claims 62-63 have been cancelled rendering this rejection moot.

#### **Section 103 Rejection Of Claims 62-63 (Over Collins in view of Yamazaki)**

Claims 62-63 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Collins in view of Yamazaki. Claims 62-63 have been cancelled rendering this rejection moot.

## Conclusion

In light of the above amendments and remarks, claims 14-15, 19, 56, 59-61 and 64-66 are all believed to be in condition for allowance. Accordingly, reconsideration and allowance of these claims is respectfully requested.

Respectfully submitted,

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